



MISSOURI NATIONAL RECREATIONAL RIVER



National Park Services
2004 Water Professionals Meeting
Fort Collins, Colorado
November 16 – 18, 2004

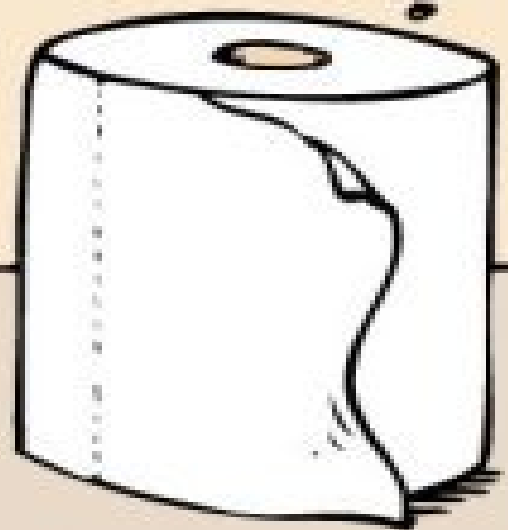
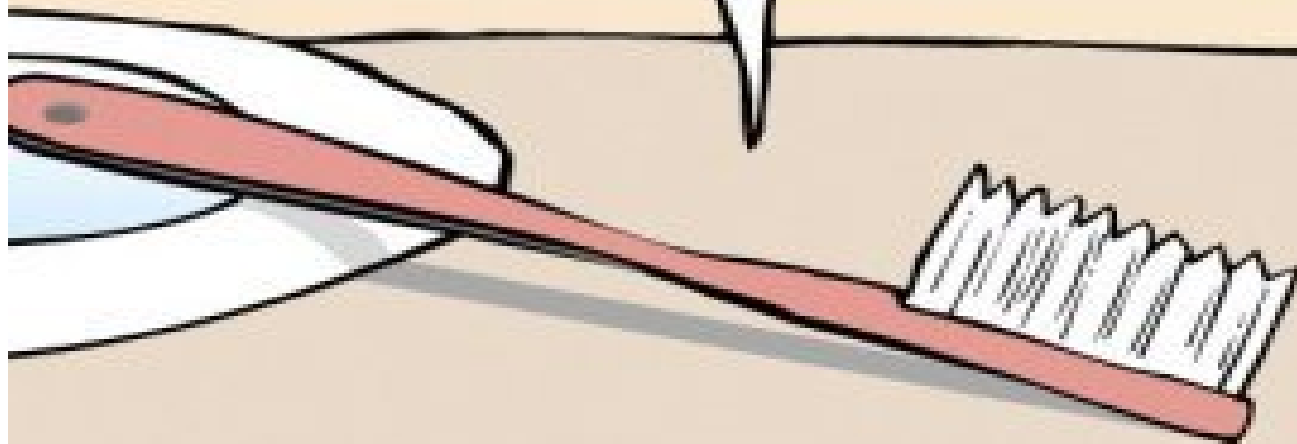
Issues and Impacts of Bank Stabilization on the
Missouri National Recreational River

by

Wayne Werkmeister

SOMETIMES
I FEEL
THAT I
HAVE THE
WORST JOB
IN THE
WORLD!

YA...RIGHT!



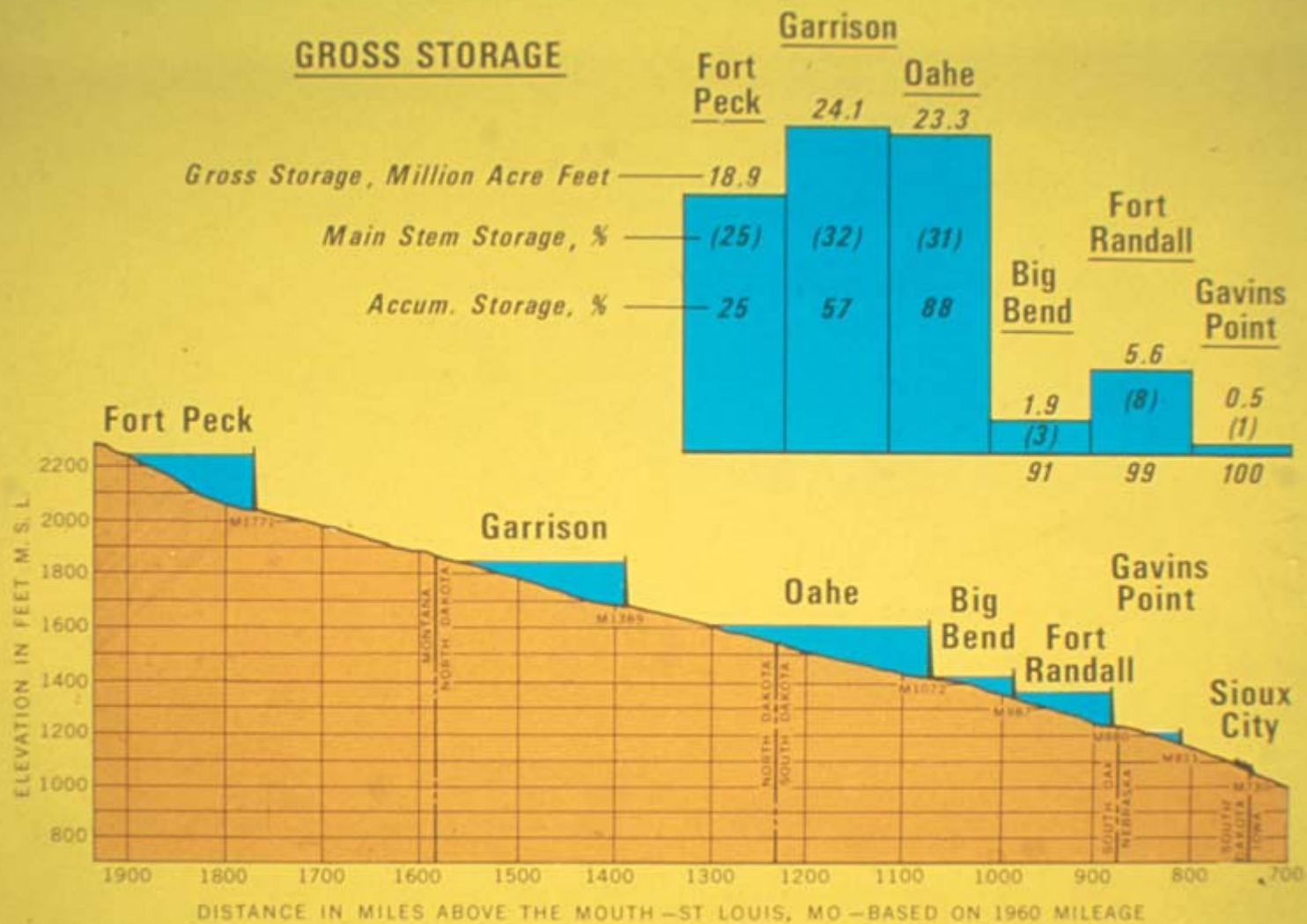
T. PECKHAM

Missouri River Basin, Some Key Elements

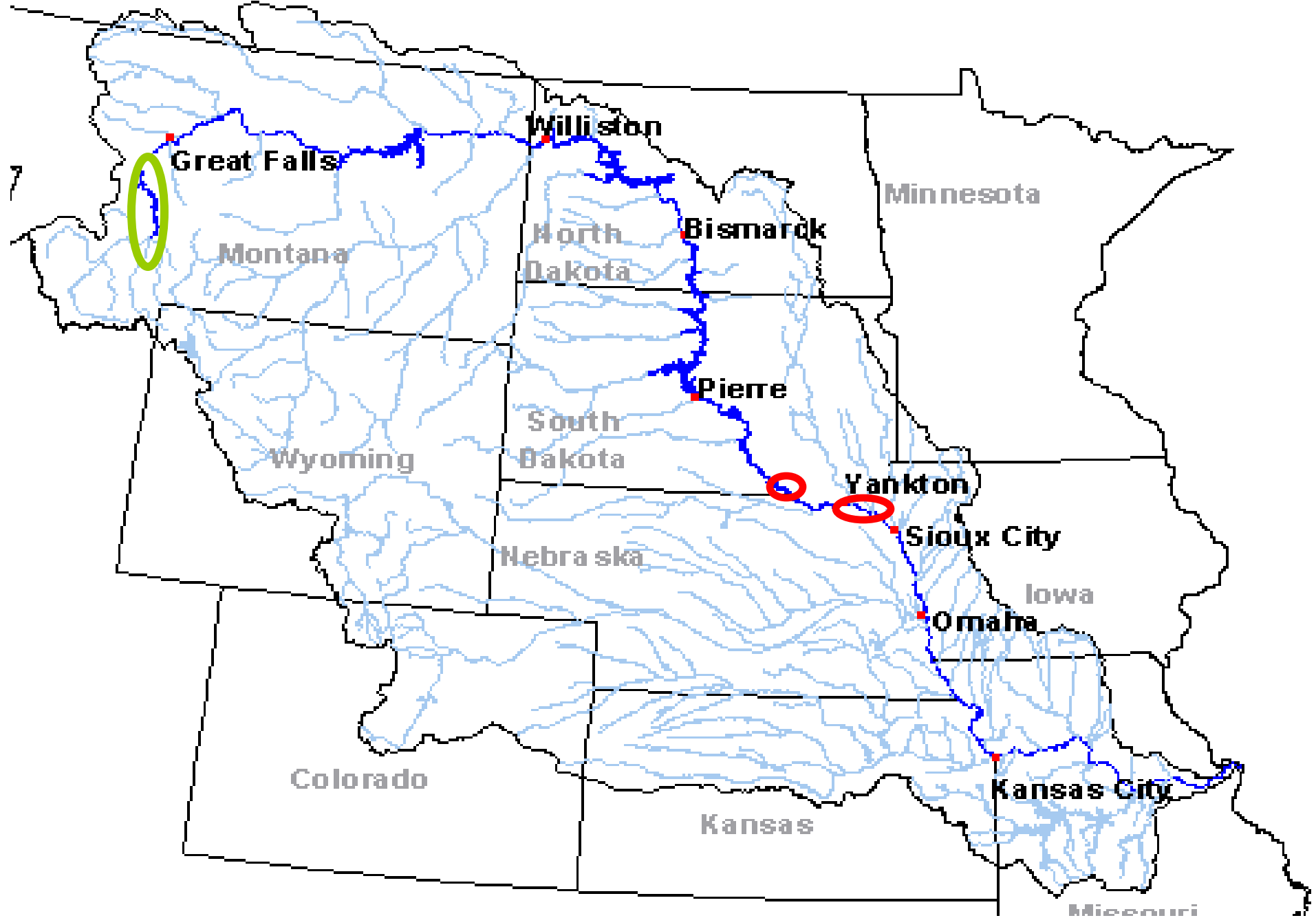
- Drains $\sim 1/6$ continental U.S.
- ~ 2400 miles long.
- Drains all or part of 10 states.
- Home of the largest reservoir system in U.S.
- $\sim 1/3$ under reservoirs
- $\sim 1/3$ channelized
- The other $1/3$ somewhere in-between
- It's big!

Missouri River Basin





Profile—Missouri River Main Stem Reservoir System





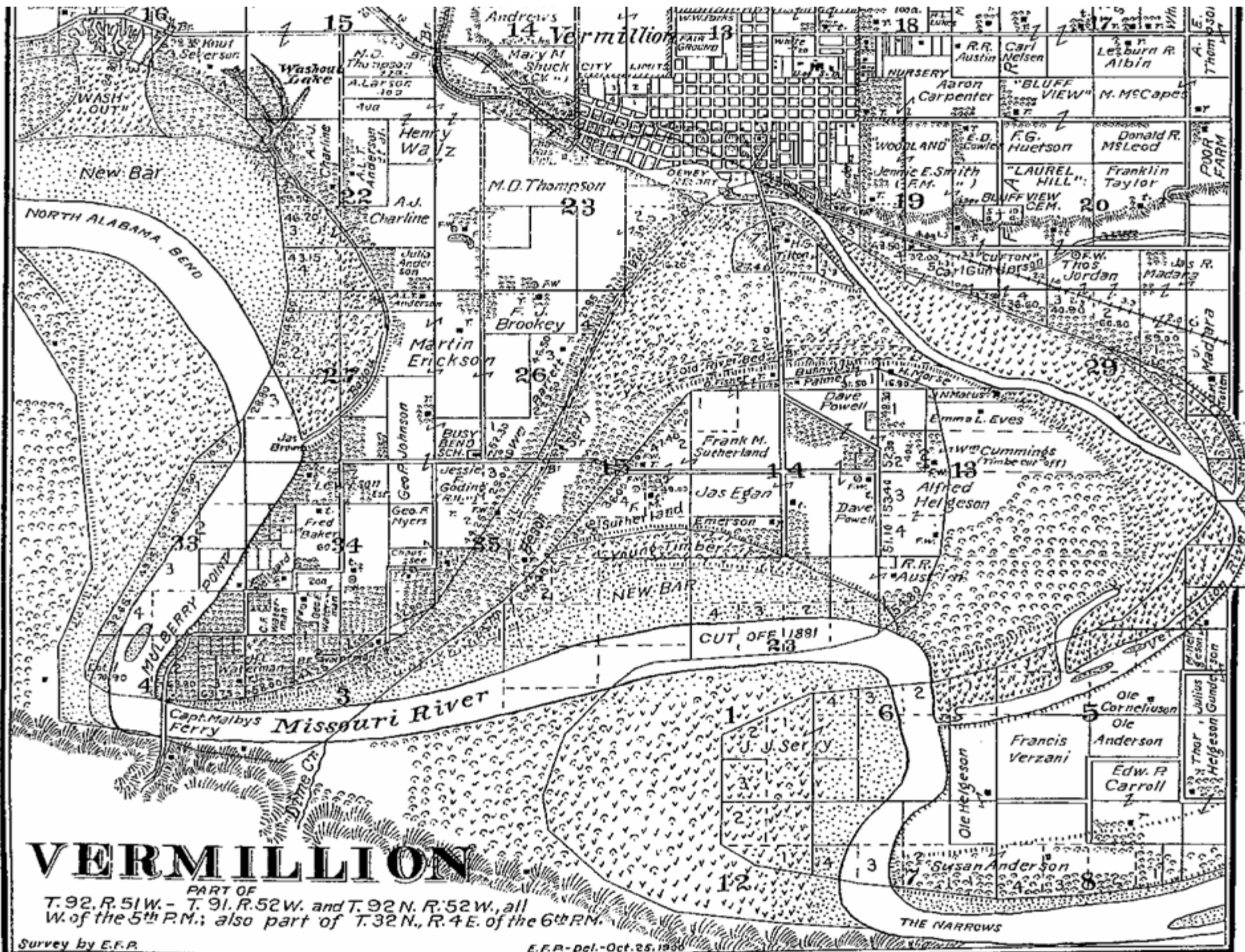




Pick-Sloan and the Missouri River Navigation and Bank Stabilization Projects have interrupted the form and function of the Missouri River.











So What's the Future Hold?



I wish everything
could be
black and white
on the
Missouri River!



The Wild & Scenic Rivers Act

- *“no department or agency of the United States shall assist by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration.”*

Threatened and Endangered Species



National Research Council

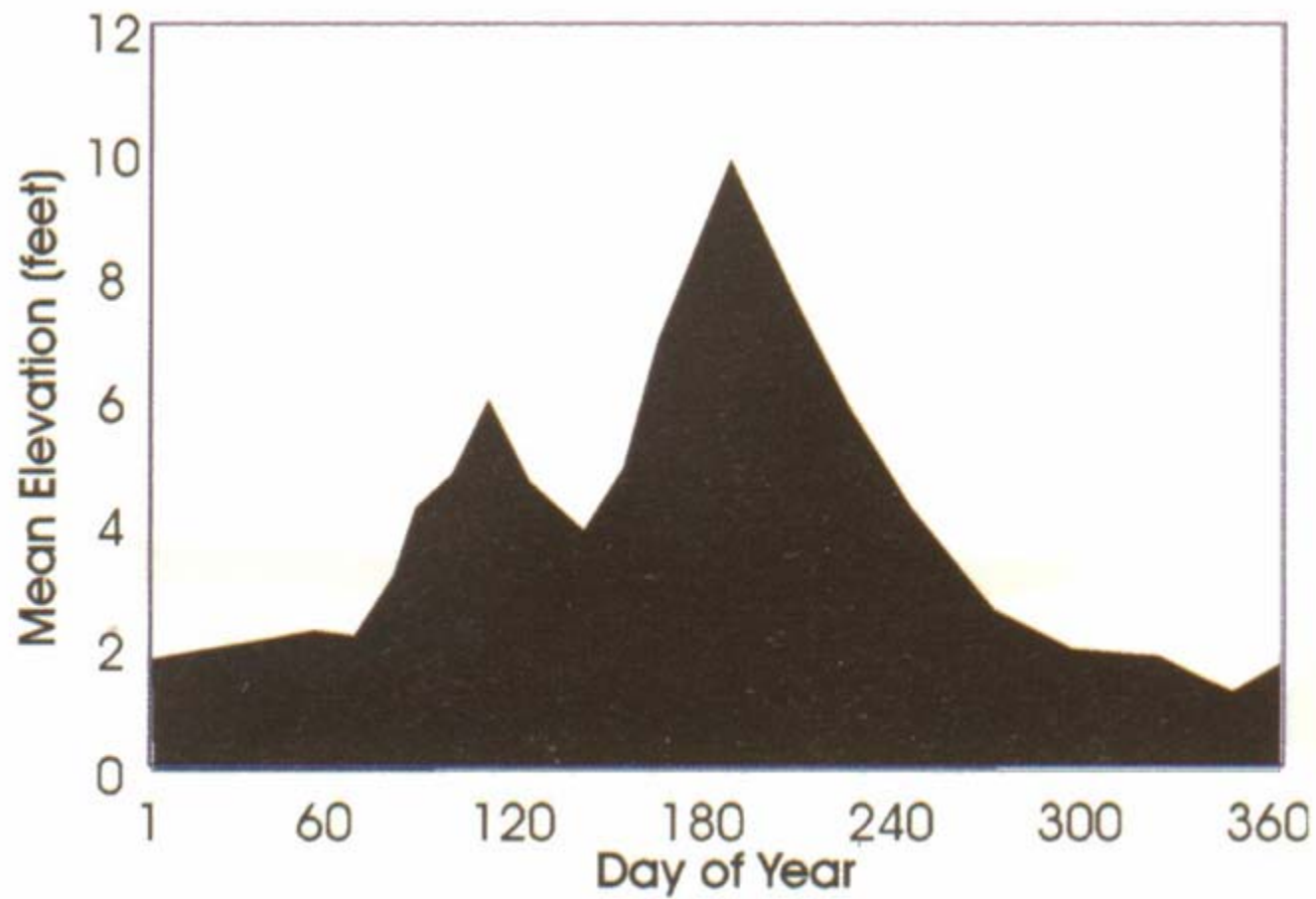
- Declining native fish species
 - of 67 native species living along the mainstem, 51 are now listed as rare, uncommon or decreasing in all or part of their range.
 - Sauger
 - Flathead chub
 - Silver chub
 - Speckled chub
 - Plains minnow
 - Silvery minnow
 - Burbot
 - Bowfin

Species of Concern

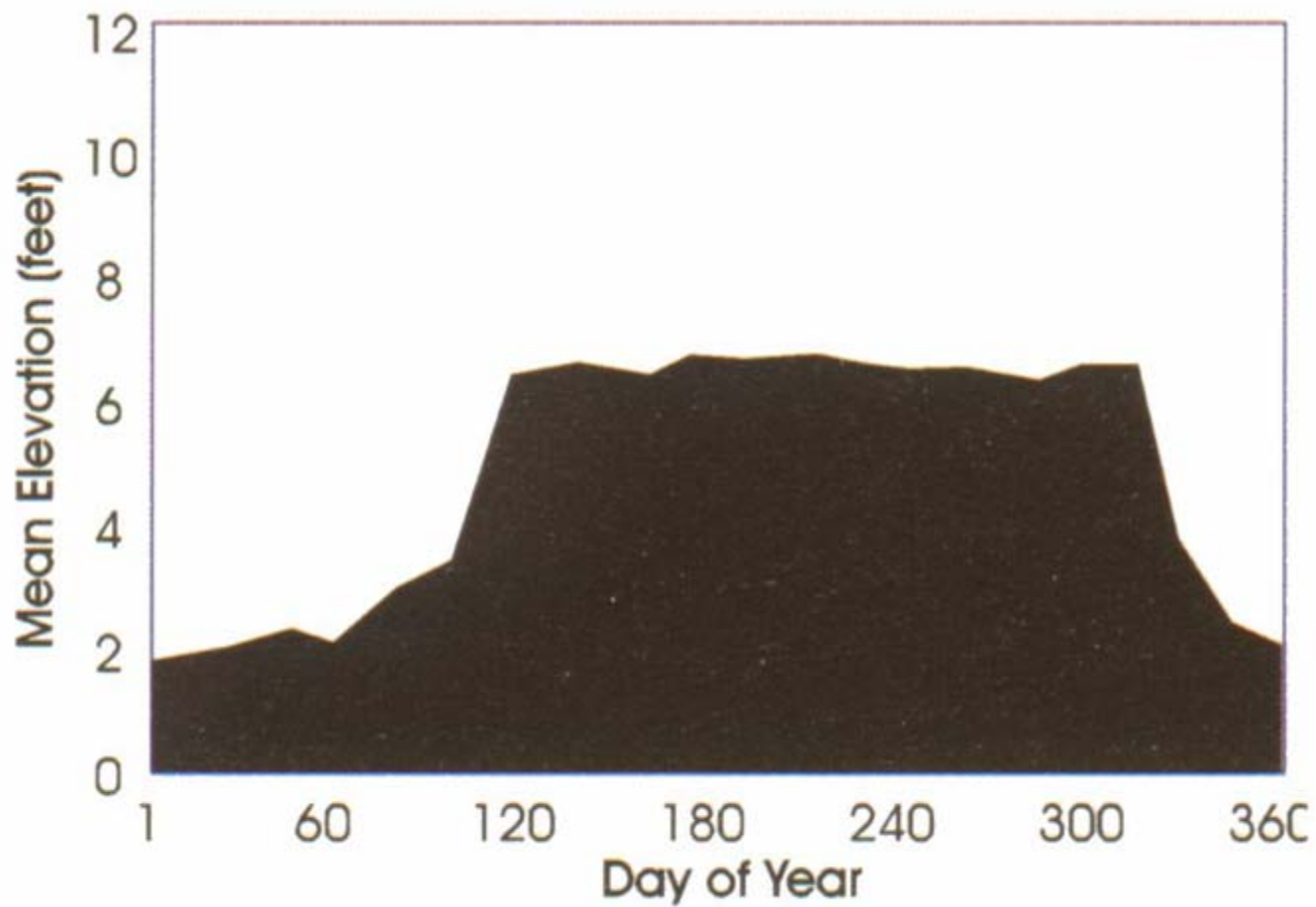
- Sturgeon Chub
 - Blacknose shiner
 - Plains Minnow
 - Western Silvery Minnow
 - Lake Sturgeon
 - River Otter
 - Osprey
- Sicklefin Chub
 - Flathead chub
 - Blue Sucker
 - Plains Topminnow
 - False Map Turtle
 - Eastern Hognose
 - Black Tern

What's Causing This?

- Flow Management
- Sedimentation
- Stabilization
- Alteration



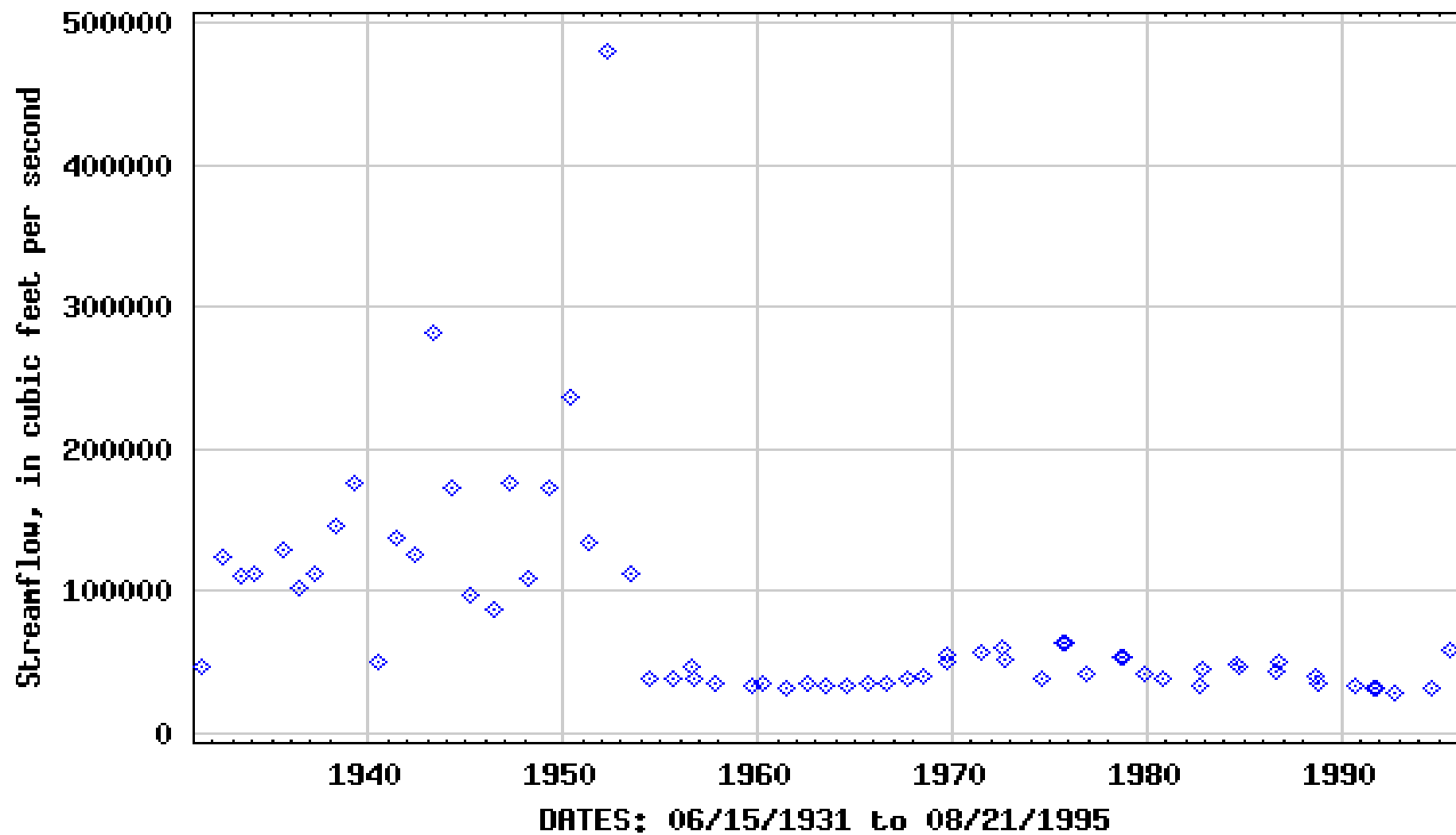
Historical natural river flow



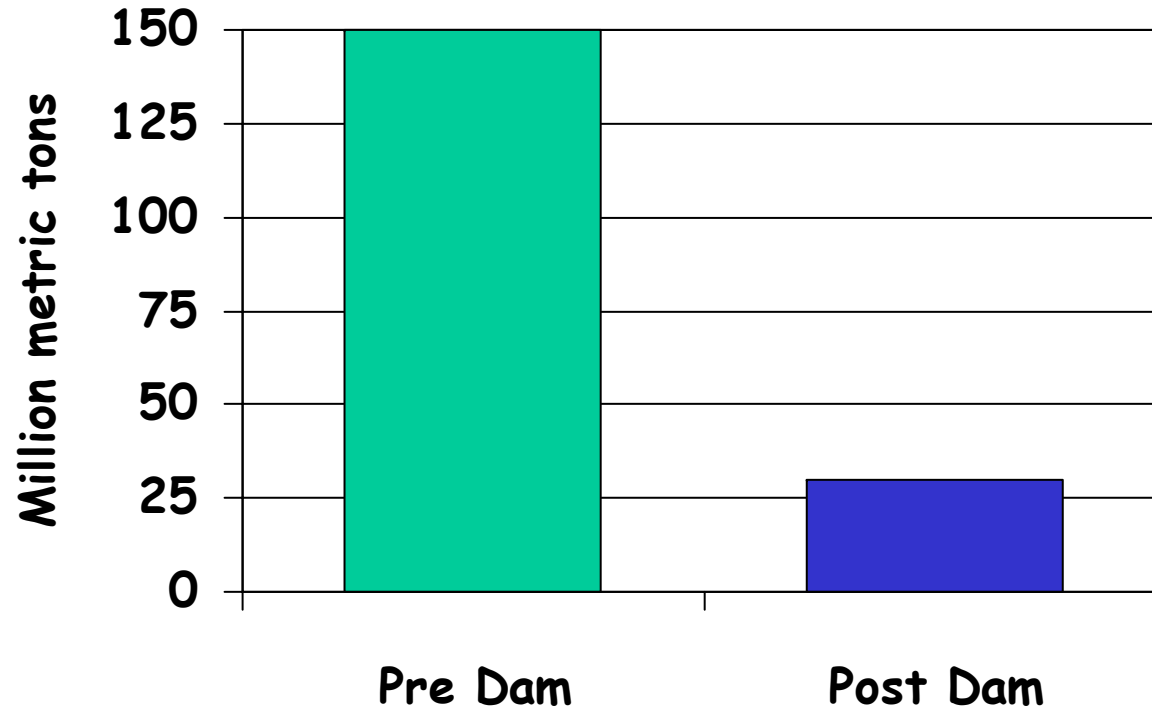
Current regulated river flow



USGS 06467500 MISSOURI R AT YANKTON SD



Average annual sediment load at Omaha









"The red are for the illness, the blue are for the side effects of the red and the green are for the effects of the blue."





Documented Bank Stabilization (DRAFT)





January 2004



Documented Bank Stabilization (DRAFT)











What's the riprap lead to?





What Are We Doing Today?





National River Cleanup 2004



MISSOURI RIVER
YANKTON, SD





mrnrr

1/1/1998









Seeking Thanksgiving Dinner !